研究論文 RESEARCH ARTICLE

日本語における畳語とブロッキング効果について
Reduplication and Blocking Effects in Japanese[1]

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ABSTRACT

本稿では,「高々と」「若々しい」「いろいろな」などの畳語表現に関して 2 つの考察を試みる。1 つは，畳語の文法範疇に関する問題で，Embick & Marantz（2008），Borer（2013），Chomsky（2015）などで提案されている仮説を応用し，畳語の文法範疇は範疇を決定する主要部と結合することによって決定されるということを示す。もう 1 つは，畳語の生産性とブロッキングに関する問題で，畳語のタイプによって異なる生産については性他所条件を使った説明を試みる。また，ブロッキングに関しては，標準的な分析とされてきたAronoff（1976）の分析と，分散形態論の枠組みにもとづいた分析を比較し，どのようなブロッキングの説明が可能なのかを考察する。

This paper discusses two issues related to reduplicative forms (R-forms) in Japanese. The main data we focus on include such examples as *taka·daka-to* 'highly', *waka·waka-sii* 'young-looking', *iro·iro-na* 'various'. The first issue has to do with categorization of these R-forms. Extending an analysis of categorization of roots developed by Embick & Marantz (2008), Borer (2013), Chomsky (2015), we claim that R-forms are unspecified as to syntactic category and get categorized via merger with a category-defining functional element. The second issue has to do with productivity and blocking effects R-forms exhibit. For productivity, we employ a version of the elsewhere condition to account for the fact that one type of R-forms show low productivity. For blocking effects, we compare two types of analyses. One is a

traditional analysis of blocking represented by Aronoff (1976). The other is an analysis in the framework of Distributed Morphology (DM). Our goal is to compare these two types of analyses and see how they manage to account for the Japanese data.

1. Introduction

One of the conspicuous characteristics of Japanese is its abundant use of reduplication. To provide some concrete examples, let us consider the following list.

(1) RED adverb (RED ADV)
mata·mata 'again', iya·iya 'reluctantly', tabi·tabi 'frequently', pika·pika-(to) 'brightly shining', taka·daka-**to** 'highly', mazi·mazi-**to** 'gazing intently'[2]

(2) RED adjective (RED ADJ)
waka·waka-**sii** 'young-looking', mizu·mizu-**sii** 'fresh', zuu·zuu-**sii** 'impudent', yoso·yoso-**sii** 'distant', nare·nare-**sii** 'too friendly'

(3) RED adjectival noun (RED AN)
iro·iro-**na** 'various', fura·fura-**na** 'unsteady', beto·beto-**na** 'sticky', peko·peko-**na** 'very hungry', sara·sara-**na** 'smooth'

As indicated, reduplicative forms (R-forms) can have various grammatical functions. R-forms in (1) function as adverbs. R-forms in (2) function as adjectives with the suffix *-sii*.[3] With the suffix *-na*, R-forms become adjectival nouns as shown in (3).[4]

The main purpose of this paper is two-fold. First, we will show that the syntactic category of R-forms must be determined by functional heads in the same way as categorization of roots (Embick & Marantz, 2008; Borer, 2013; Chomsky, 2015). Second, we will consider productivity and blocking effects that R-forms exhibit and examine two possible analyses (an analysis based on Aronoff, 1976 and analysis based on Distributed Morphology (DM)) to account for the presence and the absence of blocking effects exhibited by R-forms .

2. Categorization of R-forms

In this section, we will show that the category of R-forms derives from merger with a functional head, based on an approach to syntactic categories put forward by Embick & Marantz (2008), Borer (2013) and Chomsky (2015).

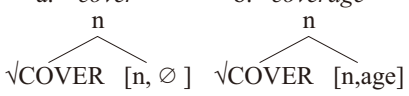
2.1 Categorization assumption

The basic assumption is that roots are unspecified as to category. The category of roots derives from merger with a functional element n, v, a, etc. Embick & Marantz (2008) put it in the following manner.

(4) Categorization assumption
Roots cannot appear (cannot be pronounced or interpreted) without being categorized; they are categorized by merging syntactically with category-defining functional heads.

Embick & Marantz represent the difference between *cover* and *coverage*, as follows.

(5) a. *cover* b. *coverage*



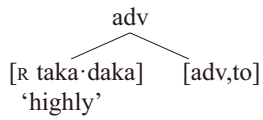
Here, the root √COVER is category-neutral and the functional category n merges with the root deriving the syntactic category noun. In the case of (5a), n is realized as a zero-morpheme and the noun cover is derived by merging this category-defining head to the root. In the case of (5b), n is realized as *-age*,

and *coverage* is categorized as a noun due to the merger of *-age* with √COVER.

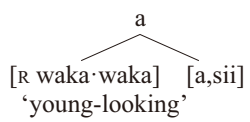
2.2 Determining the category of R-forms

R-forms themselves are obviously morphologically complex, hence cannot be regarded as roots in the standard sense. However, we take them as "combined roots" that need to be categorized by merging with category-defining functional heads.[5] Since R-forms are not (un-derived) roots, here we use [R] rather than √ notation.

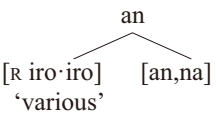
(6) a. Structure for RED ADV



b. Structure for RED ADJ



c. Structure for RED AN



Strong support for this approach comes from the fact that the root of R-forms can be taken from words of various different categories. To see this point, let us first consider the following RED ADJs.

(7) Adjective-based
waka·waka-sii 'young-looking', omo·omo-sii 'oppressive', yowa·yowa-sii 'weak-looking', ita·ita-sii 'looking painful', niga·nita-sii 'disgusting'

The examples in (7) can easily be related to corresponding adjectives: *waka-i* 'young', *omo-i* 'heavy', *yowa-i* 'weak', *ita-i* 'painful', *niga-i* 'bitter', respectively. However, reduplicated roots of RED ADJs can come from other categories including unidentified ones, as shown by the following examples.

(8) Adjectival noun-based[6]
baka·baka-sii 'silly', mame·mame-sii 'diligent'

(9) Noun-based
yoso·yoso-sii 'distant', doku·doku-sii 'malicious', mizu·mizu-sii 'fresh', sora·zora-sii 'blatant' nama·nama-sii 'vivid'

(10) Based on unidentified categories
zuu·zuu-sii 'impudent', ui·ui-sii 'pure/innocent', soo·zoo-sii 'noisy', gyoo·gyoo-sii 'exaggerated', suga·suga-sii 'bracing'

Taking up a few cases, *baka-na* 'stupid' is an adjectival noun, *yoso* 'some other place' is a noun, and *zuu* has no meaning by itself and its category cannot be identified. The fact that all these examples in (7)-(10) are RED ADJs suggests that the category of the corresponding original single word has no direct connection with the category of the R-form. It follows then that the category of RED ADJs is determined by the functional suffix *-sii*.

There is also evidence showing that reduplication must take place prior to suffixation of an appropriate functional head. First, the suffix attaching to RED-forms cannot attach to corresponding non-reduplicated roots, as the grammatical contrast below indicates.

(11) RED ADV
a. taka·daka-to 'highly' *taka-to
b. naga·naga-to 'for a long time' *naga-to
c. mazi·mazi-to 'gazing intently' *mazi-to

(12) RED ADJ
a. waka·waka-sii 'young-looking' *waka-sii

b. mizu·mizu-sii ‘fresh’ *mizu-sii
c. zuu·zuu-sii ‘impudent’ *zuu-sii

(13) RED AN
a. iro·iro-na ‘various’ *iro-na
b. fura·fura-na ‘unsteady’ *fura-na
c. beto·beto-na ‘sticky’ *beto-na

These examples show that R-forms (e.g., *taka·daka*, *waka·waka*, *iro·iro*, etc.) must be formed prior to the category-defining suffixation.

Second, there are cases in which the suffix attaching to the non-reduplicated root and the suffix attaching to the derived R-form are different. Take a look at the following examples.[7]

(14) a. baka-na/*sii ‘stupid’ *baka·baka-na
b. doku-no/*sii ‘poison’ *doku·doku-no
c. nare-ru/*sii ‘adjust’ *nare·nare-ru

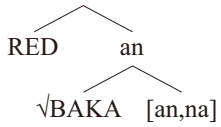
(15) a. baka·baka-sii ‘silly’
b. doku·doku-sii ‘malicious’
c. nare·nare-sii ‘too friendly’

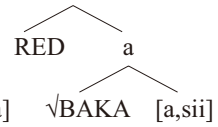
For each example in (14), despite the fact that *-sii* cannot attach to the non-reduplicated root, the derived RED ADJ is well-formed with it, as shown in (15a). (14) and (15) together also show that the suffix attaching to the non-reduplicated root cannot attach to the corresponding derived R-form. If suffixation of *-sii* precedes reduplication, all these RED ADJs cannot be derived. Let us look at the example *baka-na* ‘stupid’ as a representative case. The following structures show that the root √BAKA takes *-na* instead of *-sii*,

(16) a. 

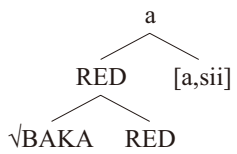
b. 

If reduplication of the root were to follow category-defining suffixation, it would result in the following structures.

(17) a. 

b. 

We assume here that RED functions as a place-holder to which the reduplicative copy of the root is inserted in the process of Spell-Out. (17a) would result in **baka·baka-na*, which is ill-formed. (17b) also is not appropriate because **baka-sii* is ill-formed in the first place, as already shown in (14a) and (16b). Hence, the only possible structure for *baka·baka-sii* will be something like (18) below, which involves reduplication followed by suffixation.

(18) 

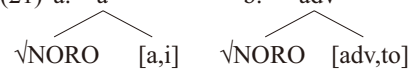
Assuming that R-forms are category-neutral, the adjectival suffix *-sii* determines the category of *baka·baka-sii* as adjective. The following examples further illustrate a similar point.

(19) a. noro-i/*to ‘slow’
b. atu-i/*no ‘hot’
c. yuru-i/*na ‘loose’

(20) a. noro·noro-to ‘very slowly’ *noro·noro-i
b. atu·atu-no ‘very hot’ *atu·atu-i
c. yuru·yuru-na ‘very loose’ *yuru·yuru-i

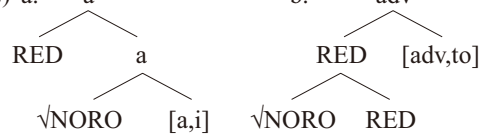
In each case of (19), while the root takes the adjectival suffix *-i*, the corresponding R-form must take a different suffix. (19a) can be structurally represented as in the following.

(21) a. a b. *adv



(21a) and (21b) illustrate that the single root √NORO can take *-i* but not *-to*. If reduplication takes place after merging with the category-determining functional head [a,i], the result would be the structure shown in (22a). If, on the other hand, reduplication takes place prior to suffixation, the well-formed *noro·noro-to* can be successfully derived, as shown in (22b).

(22) a. *a b. adv



Based on the discussion above, we can conclude that reduplication must take place prior to category-determining suffixation.

2.3 Selection of functional heads for R-forms

If the analysis just presented is on the right track, we must clarify the function of RED to account for the fact that R-forms can be of different categories. Remember that the category-determining functional head attaching to the RED-form and that of non-reduplicated root are different. This point can be reconfirmed by the following examples.

(23) RED ADV
- a. taka·daka-to 'highly'
- b. *taka-to
- c. taka-i (adjective)

(24) RED ADJ
- a. baka·baka-sii 'silly'
- b. *baka-i/sii
- c. baka-na (adjectival noun)

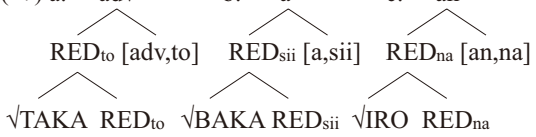
(25) RED AN
- a. iro·iro-na 'very slow'
- b. *iro-na
- c. *iro-i/sii

It is clear, from these examples, that the non-reduplicated root selects the category-determining functional head for its R-form. It must be RED that is responsible for this head-selection. Though there must be many different ways to implement this selection mechanism, we just simply assume that there are different types of REDs selecting their appropriate functional heads, as shown in (26).

(26) a. RED_{to} for RED ADVs with *-to*
- b. RED_{sii} for RED ADJs
- c. RED_{na} for RED ANs

The structure of the (a) example in (23)-(25) can be represented in the following manner.

(27) a. adv b. a c. an



In each case, the root specifies which RED to take, and the category-determining functional head must match the type of RED specified by the root. The basic mechanism is the same as the cases that the root √BAKA specifies the functional head [an,na] and derives an adjectival noun by merging with it, √NORO specifies [a,i] to form an adjective, and so on. We will look at some roots that can specify more than one RED in section 3.3.

3. Productivity of R-forms and blocking effects

In this section, we take up productivity and blocking effects exhibited by R-forms. First, we

will consider the fact that RED ADVs and RED ANs are rather productive while RED ADJs are not. We will try to explain this fact in terms of the elsewhere condition (Anderson, 1986; Halle & Marantz, 1993; Bobaljik, 2017, etc.). Second, we will show that R-forms sometimes exhibit blocking effects and see how an Aronoff (1976) style analysis and a DM style analysis manage to account for the Japanese data.

3.1 Productivity of R-forms

Let us begin with productivity of R-forms. According to Sho (2001), the total of 598 RED ADVs are listed in major dictionaries.[8] Both RED ADVs and RED ANs can be newly created rather easily by using onomatopoeic and mimetic expressions. We can come up with examples like the following and many others without much effort.[9]

(28) RED ADV: kata·kata-(to) 'clattering', kyoro·kyoro-(to) 'looking around', gira·gira-(to) 'glaring', kiri·kiri-(to) 'squealing', gui·gui-(to) 'forcefully', moku·moku-(to) 'massively rising', hiri·hiri-(to) 'irritatingly', poka·poka-(to) 'pleasantly warm', don·don-(to) 'banging', soyo·soyo-(to) 'gently', etc.

(29) RED AN: beta·beta-na 'sticky', para·para-na 'sprinkling', gotu·gotu-na 'rugged', gowa·gowa-na 'rough', nuru·nuru-na 'slimy', dabu·dabu-na 'baggy', fuka·fuka-na 'fluffy', turu·turu-na 'slippery', yore·yore-na 'shabby', zito·zito-na 'damp', etc.

RED ADJs, on the other hand, show much lower productivity. Jin (1995) lists 64 RED ADJs and Den (2014) 65.[10] However, this does not mean that RED ADJs constitute a closed class. New RED ADJs can be created. The following are some of the newly coined RED ADJs often used on the internet.

(30) a. gyaru·gyaru-sii onna 'a woman looking like a young girl',
b. niku·niku-sii hanbaagu 'a meaty hamburg steak',
c. gumi·gumi-sii katamari 'a chunk of something with the gummy candy-like texture',
d. neko·neko-sii neko 'a cat looking like a typical cat',
e. tori·tori-sii tyoosyoku 'breakfast with a variety of chicken dish'

It is still worth noting that RED ADJ formation is much less productive than the other two RED-forms.

Why are RED ADJs not as productive as RED ADVs or RED ANs? One possible account might be to attribute the difference in productivity to the elsewhere condition, which has been broadly assumed.[11]

(31) The Elsewhere Condition (Anderson 1986: 4)
Whenever one rule is more specific than another in the sense that the forms subject to the first constitute a proper subset of those subject to the second, the application of the more specific rule precludes the later application of the more general, less specific one.

Japanese tends to employ the suffix *-na*, rather than *-i* or *-sii* to create new words with the adjectival function. Loan words, for example, tend to take *-na*.[12]

(32) furessyu-na/*i/*sii 'fresh', kuria-na/*i/*sii 'clear', oosodokkusu-na/*i/*sii 'orthodox', kazyuaru-na/*i/*sii 'casual', sofuto-na/*i/*sii 'soft', taito-na/*i/*sii 'tight', etc.

Suppose that suffixation of *-i* and *-sii* can be considered more specific than suffixation of *-na* to

make R-forms that function as adjectives. The latter applies generally to all other forms that are not subject to the former. Since the application of specific rules are usually more restricted than that of less specific ones, the fact that RED ADJs are less productive than RED ANs follows from the elsewhere condition. This explanation puts *-to* suffixation aside because RED ADJs do not constitute a proper subset of RED ADVs. High productivity exhibited by RED ADVs must receive an independent explanation.

3.2 Blocking effects exhibited by R-forms

Another curious fact to be explained is that, once RED ADJs are well-formed, corresponding RED ANs are ill-formed, as shown in (33).

(33) a. waka·waka-sii 'young-looking'
*waka·waka-na
b. omo·omo-sii 'oppressive' *omo·omo-na
c. baka·baka-sii 'silly' *baka·baka-na
d. yoso·yoso-sii 'distant' *yoso·yoso-na
e. mizu·mizu-sii 'fresh' *mizu·mizu-na
f. zuu·zuu-sii 'impudent' *zuu·zuu-na

This pattern holds for newly created RED ADJs given in (30) as well.

(34) a. gyaru·gyaru-sii/*na
b. niku·niku-sii/*na
c. gumi·gumi-sii/*na
d. neko·neko-sii/*na
e. tori·tori-sii/*na

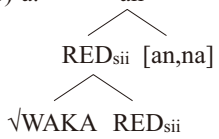
Interestingly, the reverse is also true. RED ADJs cannot be formed from corresponding RED ANs, as shown in (35).

(35) a. iro·iro-na 'various' *iro·iro-sii
b. fura·fura-na 'unsteady' *fura·fura-sii
c. beta·beta-na 'sticky' *beta·beta-sii
d. para·para-na 'sprinkling' *para·para-sii
e. nuru·nuru-na 'slimy' *nuru·nuru-sii
f. gotu·gotu-na 'rugged' *gotu·gotu-sii

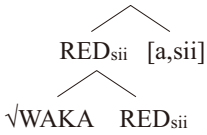
How would Aronoff (1976) explain these data? He defines blocking as "the nonoccurrence of one form due to the simple existence of another." In accordance with the elsewhere condition, suppose that *-sii* suffixation is more specific than *-na* suffixation. The facts shown in (33)-(35) would then be accounted for in the following manner: The simple existence of the *-sii* suffixed form blocks the *-na* suffixed form. The *-na* suffixed form will not be blocked only if *-sii* suffixed form is absent. Notice that this explanation is based on a loose interpretation of Aronoff's analysis of blocking. His analysis actually makes a clear distinction between those elements listed in the lexicon and those need not be, and only those listed in the lexicon show blocking effects. Thus, because *glory*, *fury* and *grace* and the *-ity* suffixation are all listed in the lexicon, **gloriosity*, **furiosity* and **graciosity* are blocked. Moreover, since the *-ness* suffixation is a general and predictable rule and need not be listed in the lexicon, *gloriousness*, *furiousness*, and *graciousness* will not be blocked. Under a narrower interpretation of Aronoff's analysis, we would have to assume that both *-sii* and *-na* suffixations must be listed in the lexicon. This might be a troublesome assumption to make, given that *-na* suffixation is generally predictable and productive.

Embick & Marantz (2008), on the other hand, take a different approach towards blocking, within the framework of DM. In their analysis, this type of blocking effects would be attributed simply to the choice of category-determining functional elements. A simplest analysis of R-forms based on DM, therefore, would assume that the type of RED and the functional head must match, as shown in (36b) and (37a) below.

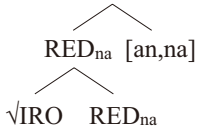
(36) a. *an



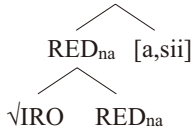
b. a



(37) a. an



b. *a



At this point, we cannot conclude which one of the two analyses we looked at is superior.

There is another set of interesting data to be accounted for in this context. Hirose (2017) points out that RED ADVs and RED ADJs exhibit blocking effects and these two types of R-forms complement each other. Thus, if RED ADJs are well-formed, corresponding RED ADVs are ill-formed, and vice versa.

(38) a. waka·waka-sii ‘young-looking’ *waka·waka-to
b. omo·omo-sii ‘oppressive’ *omo·omo-to
c. baka·baka-sii ‘silly’ *baka·baka-to
d. yoso·yoso-sii ‘distant’ *yoso·yoso-to
e. mizu·mizu-sii ‘fresh’ *mizu·mizu-to
f. zuu·zuu-sii ‘impudent’ *zuu·zuu-to

(39) a. kata·kata-(to) ‘clattering’ *kata·kata-sii
b. kyoro·kyoro-(to) ‘look-around’ *kyoro·kyoro-sii
c. kiri·kiri-(to) ‘squealing’ *kiri·kiri-sii
d. gira·gira-(to) ‘unsteadily’ *gira·gira-sii
e. poka·poka-(to) ‘warm’ *poka·poka-sii
f. sara·sara-(to) ‘smoothly’ *sara·sara-sii

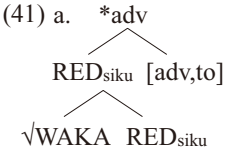
In the case of blocking between RED ADJs and RED ANs in (33)-(35), both R-forms share a property of functioning as adjectives. Blocking effects in (38) and (39) are between RED ADJs and RED ADVs, which are clearly different in grammatical function. What links these two types of R-forms? It must be the fact that adverbial forms can be derived from RED ADJs by changing *-sii* to *-siku*. Thus, the examples in (40) function as adverbs.

(40) a. waka·waka-siku ‘young-looking way’
b. omo·omo-siku ‘oppressively’
c. baka·baka-siku ‘silly-looking way’
d. yoso·yoso-siku ‘unfriendly way’
e. mizu·mizu-siku ‘fresh-looking’
f. zuu·zuu-siku ‘impudently’

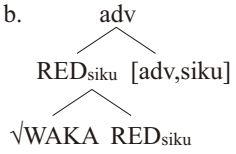
We can assume that it is these *-siku* forms that actually compete with corresponding RED ADVs. The *-siku* form can be automatically obtained once the *-sii* form is allowed.

Just as before, under Aronoff’s analysis, the grammatical pattern shown in (38) and (39) would be explained only if suffixation of *-sii/siku* and *-to* must both be listed in the lexicon and the former takes precedence over the latter. The DM analysis suggested above, again, would attribute the pattern to the matching the type of RED and its functional head.

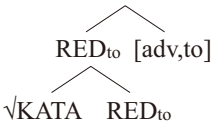
(41) a. *adv



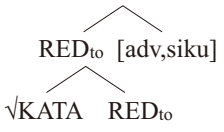
b. adv



(42) a. adv



b. *adv



The general blocking pattern illustrated by the examples we considered above is that the existence or non-existence of the *-sii* RED ADJ form plays a crucial role. It must be noted that, for the Aronoff style analysis to work, we must assume that formation of

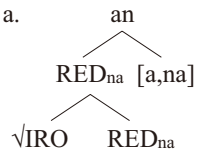
RED ADVs, which is highly productive, must also be listed in the lexicon.

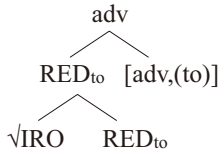
3.3 Cases lacking blocking effects

In this subsection, we will take up two cases lacking blocking effects. As can be seen in (43), no blocking effects are observed between RED ANs and RED ADVs.

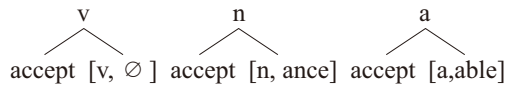
(43) a. iro·iro-na 'various' iro·iro-(to)
b. fura·fura-na 'unsteady' fura·fura-(to)
c. beta·beta-na 'sticky' beta·beta-(to)
d. para·para-na 'scattering' para·para-(to)
e. nuru·nuru-na 'slimy' nuru·nuru-(to)
f. gotu·gotu-na 'rugged' gotu·gotu-(to)

Here, RED ANs do not block RED ADVs, and vice-versa. For the Aronoff style analysis, the fact that no blocking effects are observed in (43) can be attributed to the hypothesis that the RED AN and its corresponding RED ADV do not compete for occupying the same slot in the lexicon because they are different in category. For the DM analysis, the lack of blocking effects here can be explained by referring to the fact that RED ANs cannot derive morphologically related adverbial forms. The structure for the RED AN *iro·iro-na* is (44a) and that of the RED ADV *iro·iro-(to)* is (44b).

(44) a. 

b. 

The choice of category-defining functional heads here is not a matter of allomorphy. Both RED ANs and RED ADVs are productive and there is no conflict with these heads. The situation is in a way similar to English cases such as the following.

(45) a. *accepted* b. *acceptance* c. *acceptable*


No blocking effects are expected since the choice of the functional category is not a matter of allomorphy and all of these cases are allowed without any trouble.

As a final note, it should be pointed out that there are some apparent exceptions to the generalizations observed in section 3.2 above. There, we noted two cases showing blocking effects: (i) If RED ADJs are well-formed, corresponding RED ANs are ill-formed, and vice-versa. (ii) If RED ADVs with the suffix *-siku* are well-formed, corresponding RED ADVs are ill-formed, and vice versa. (46) below is an exceptional case for (i), and (47) for (ii)

(46) a. toge·toge-**sii** taido 'a harsh attitude'
b. toge·toge-**na** happa 'a leaf with prickles'

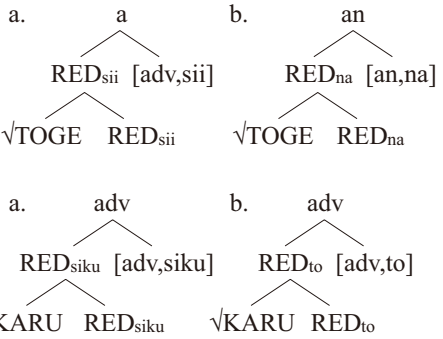
(47) a. karu·garu-**siku** iwa-naide-kudasai.
carelessly say-not-please
'Please do not say carelessly.'

b. karu·garu-to baaberu-o motiageta.
easily barbell-ACC lifted
'(He) lifted the barbell easily.'

In each of these cases, though both forms exist, they are semantically different and cannot be used interchangeably (Hirose 2017).[13] In the Aronoff style analysis, just like the previous case, the lack of blocking effects in these examples would be attributed to the hypothesis that each pair of words do not compete for the same slot in the lexicon. In the DM style analysis, assuming that the root is shared by each pair of R-forms, the meaning difference is attributed to the two different types of RED. This can be illustrated in (48) and (49).

(48)

(49)



It should be noted that, for the DM approach, a variety of other possibilities will open up if we allow more detailed syntactic structures associated with R-forms.[14] The DM analysis we considered in this paper is just one simple possibility but it is useful to understand how blocking effects should be treated in a non-lexicalist approach.

4. Conclusion

In this paper, extending Embick & Marantz's (2008) categorization assumption, we have argued that R-forms in Japanese are category-neutral and must be categorized for Spell-Out by merging syntactically with category-defining functional heads. We have also pointed out that R-forms are not equally productive. We suggested that the low productivity exhibited by RED ADJs can be explained in terms of the elsewhere condition but there could be many other way to explain it. Finally, we have discussed in detail how the presence and the absence of blocking effects among R-forms can be explained. We compared the two approaches (the Aronoff style and the DM style). Though no explicit conclusion was drawn as to which of the two approaches would be superior, we believe that we have revealed some interesting properties that Japanese R-forms have.

Notes

1 We would like to thank Keita Ishii, Hiroaki Saito and two anonymous reviewers for helpful comments and suggestions for improvement. All remaining errors are our own.

2 The suffix *-to* is obligatory for some RED ADVs and it is optional for others. Also, there are some RED ADVs that cannot take *-to*. R-forms sometimes induce sequential voicing, which suggests R-forms involve a kind of compound-formation process.

3 For the sake of simplicity, we assume in this paper that *-sii* is a single adjective-forming suffix. See Kitahara (2010) for a different view.

4 Nouns indicating plurality can also be formed by reduplication: *kuni·guni* 'countries', *hito·bito* 'people', *yama·yama* 'mountains', *kami·gami* 'gods', *mura·mura* 'villages', *hosi·bosi* 'stars'. In this paper, we will focus on RED ADVs, RED ADJs and RED ANs.

5 Whether or not R-forms must be listed in the lexicon is an issue that we will touch upon in section 3. See Hirose (2017) for an analysis of RED ADJs and RED ADVs along the lines of Prosodic Morphology (McCarthy 1981, Marantz 1982, Broselow & McCarthy 1983, etc.).

6 It is worth noting that these two RED ADJs are the only ones currently used that are derived from adjectival nouns.

7 In Japanese, *-no* generally can attach to nominal base, and *-ru* to verbal base.

8 Sho's count is based on Takeuchi (1973), *Iwanami Kokugo Jiten* (5th ed.) and *Gakken Kokugo Daijiten* (2nd ed.).

9 Some of these R-forms can be used either as adverbs or adjectival nouns: *gira·gira-(to)* 'glaring'/*gira·gira-na* 'glaring', *poka·poka-(to)* 'pleasantly warm'/ *poka·poka-na* 'pleasantly warm', *para·para-na* 'sprinkling'/*para·para-(to)* 'sprinkling', *sara·sara-na* 'smooth'/*sara·sara-(to)* 'smoothly', etc. We will come back to examples like these in section 3.3.

10 Jin's count is based on his dictionary search: *Kokugo Daijiten* (1st ed.), *Gakken Kokugo Daijiten* (1st ed.), *Meikai Kokugo Jiten* (3rd ed.), *Iwanami Kokugo Jiten* (4th ed.) and Den's count is based on *Gyakubiki Kojien*. Some of the listed RED ADJs sound archaic or odd to us.

11 Other ways to put this condition include the following:
(i) Rules are ordered by the principle that the more specified rule takes precedence over the rules that are less specified. (Halle & Marantz,

1993, p. 120)
(ii) Where more than one mutually exclusive rule may apply, (only) the most highly specified rule applies. (Bobaljik, 2017)

12 One exception appears to be *nau-na/i* 'now' in that both forms, *nau-na* and *nau-i*, have been used in casual conversation. In more current use, the suffix *-i* may attach to some truncated adjectival stems with two morae: *muzu-i* from *muzuka-sii* 'difficult', *hazu-i* from *hazuka-sii* 'shameful', *kimo-i* from *kimotiwaru-i* 'creepy', etc.

13 In addition to the semantic difference, Hirose (2017) found that such *siku/to* pairs sometimes show difference in frequency of use. That is, one form is far more frequently used than the other: *naga·naga-si-ku* 'unnecessarily long manner' (5) vs. *naga·naga-to* 'for a long time' (302), *ara·ara-si-ku* 'violently' (153) vs. *ara·ara-to* 'roughly' (1), *kudo·kudo-si-ku* 'repetitiously' (1) vs. *kudo·kudo-to* 'insistently' (44), *samu·zamu-si-ku* 'drearily' (11) vs. *samu·zamu-to* 'wintrily' (61), etc. where the number in parentheses are the number of search hits in *Balanced Corpus of Contemporary Written Japanese* (BCCWJ).

14 One of the reviewers also suggests an interesting analysis in which RED ADVs and RED ANs involve phrasal projection while RED ADJs are formed in the word-level lexeme formation. This analysis can attribute the high productivity exhibited by RED ADVs and RED ANs to the general observation that rules in syntax are more productive than ones in morphology. The observed blocking effects also receive a nice explanation. Since the RED ADJs are morphologically formed, corresponding RED ADVs and RED ANs cannot be formed in syntax, resulting in blocking effects. The lack of blocking effects between RED ADVs and RED ANs also can be attributed to the syntactic nature of their formation. Though this proposal is certainly worth pursuing, at this point, we have to leave it for future research.

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